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REPORT

OF THE

MEDICAL OFFICER OF HEALTH

FOR THE

ADMINISTRATIVE COUNTY OF ESSEX

FOR THE YEAR 1918.

Part I. Statistics.

The County Public Health Committee and the Local Government Board both desire that the reports of the Medical Officers of Health for the year 1918 should be as brief as possible, recording merely the vital statistics and some account of the more important matters which have received the attention of the various Health authorities during the year. The mortality statistics upon which this report is based are those kindly furnished by the Registrar-General. Copies of these were sent to every Medical Officer of Health in the County, with the request that they should verify them as far as possible. In the great majority of cases these were accepted as correct, and in the few areas in which there is a discrepancy this is so small as to be negligible, and as the Registrar-General's returns are most likely to be correct they have been adopted in their entirety in all the following Tables.

There is one fundamental source of error. The estimated populations for the year may be incorrect. In previous years the Registrar-General had the Food Control statistics to assist him, but last year there was no enumeration of the population for any district, therefore the estimates are intelligent guesses. This source of error will continue until the Army is demobilized and the men have again settled in their homes, and a new census (due in 1921) has been taken.

In this County I doubt whether the error can be so great as to seriously affect the statistics, but slight differences, never of great importance in statistics for a single year, especially in comparatively small areas, had best be ignored.

POPULATION. In 1915, after East Ham had separated from the Administrative County, the population was estimated at 867,394. In subsequent years so many males were in the Army that the Registrar-General issued special statistics, one to be used for calculating the death-rate amongst civilians only and the other including military members for calculating the birth-rate. These estimates were as under :—

		Population for Death-rate.		Population for Birth-rate.
1916	...	836,507	...	910,136
1917	...	795,510	...	885,854
1918	...	775,574	...	869,002

BIRTH-RATES. The number of births registered during the year was 13,543, of which 9,623 occurred in the Urban areas and 3,920 in the Rural districts. This gives a birth-rate of 15·5 persons per 1,000, and was practically the same in both Urban and Rural districts. The highest rates were recorded in Barking, Brightlingsea, Grays, Harwich, Shoeburyness, Tilbury Urban, and the lowest in Burnham, Halstead, Ilford, Saffron Walden, Wanstead and Woodford. In the latter districts the death-rates considerably exceeded the birth-rates, hence there must be a natural decrease in the population.

DEATH-RATES The total number of deaths certified was 11,777, of which 8,379 were in the Urban districts and 3,398 in the Rural. This gives a death-rate of 15·1 for the whole County and 15· for the Rural and 15·2 for the Urban areas. Therefore, for each of the areas taken, as a whole there was a slight excess of births over deaths. The death-rate was 18· or over in Clacton, Epping, Halstead, Maldon, Tilbury, Witham and Wivenhoe, all Urban districts. In the Rural districts this number was only exceeded in two districts—Belchamp and Halstead.

INFANTILE MORTALITY. Notwithstanding the unusually high mortality at all ages (*Vide* Table I.), it is worthy of remark that the infantile mortality is very low. In fact, during the whole period of the War it has been as low as in the pre-War period. In the Rural districts the deaths amongst infants under one year of age was only 58 per 1,000 births and in the Urban districts 75. These give a rate of 70·6 for the whole Administrative County, compared with 78 for the previous year and 97 for the whole country.

All our mortality statistics compare very favourably with those for England and Wales (Table II.), but the birth statistics compare unfavourably, the birth-rate in Essex being 2·2 per 1,000 below the average for the whole country.

The Infantile Mortality was excessive in many districts. It exceeded 85 in the following areas:—Clacton, Epping, Leyton, Loughton, Tilbury, Waltham Cross and Witham Urban and in Orsett and Tendring Rural.

MORTALITY FROM THE PRINCIPAL INFECTIOUS DISEASES EXCLUDING INFLUENZA AND TUBERCULOSIS. The mortality averaged ·44 per 1,000 population for the whole County, a very favourable return compared with ·77 for England and Wales.

TUBERCULOSIS. (a) Pulmonary. The death-rate in the Urban Districts was 1·3 per 1,000 persons and in the Rural districts ·91. In the previous year the rate were 1·1 and 1·0, so that there was an increase in the towns and a decrease in the Rural areas. As many of these deaths occurred amongst discharged soldiers from disease contracted whilst in the Army, the results are extremely satisfactory. From the immense amount of public attention directed to these cases and the multitude of official communications concerning them, I had fully expected to find that the disease was far more rampant than is actually the case. If the agitation leads to all such cases being dealt with by one Authority instead of by several as at present, the result may be of benefit to the country.

(b) *Non-Pulmonary Tuberculosis.* The death-rate from this type of the disease was '32 per 1,000, and differed very little in the Urban and Rural districts.

INFLUENZA. This disease was rampant in the latter half of the year and caused about twice as many deaths as Tuberculosis, Scarlet Fever, and all the other infectious diseases put together. In the Urban districts it caused 3·3 deaths per 1,000 population, and 3 per 1,000 in the Rural areas. Obviously, therefore, it was as rampant in the thinly populated as in the densely populated districts. Not a single district escaped, but some suffered far more severely than others. In the towns the death-rate varied from '3 in Buckhurst Hill to 7·5 in Witham. In the Rural areas it varies from '8 in Belchamp to 5·1 in Halstead—adjacent districts.

The mortality exceeded 5 per 1,000 in the following districts :—Urban : Barking, Ilbury and Witham. Rural : Belchamp.

It was over 4 per 1,000 but under 5 in :—Urban : Brentwood, Frinton, Halstead and Shoeburyness. Rural : Ongar.

It was far under the average in Brightlingsea, Buckhurst Hill, Epping, Burnham and Wanstead Urban, and Stansted Rural ; in none of which it reached half the average. This is far the most serious epidemic which has occurred in the County hitherto recorded. It caused no less than 2,495 deaths out of a total of 11,777 or 21 per cent. Had it not been for this the death-rate would have been about the lowest which has ever been recorded in the County.

Only one Medical Officer of Health has sent in any special report on the outbreak. Dr. Ewart, Medical Officer of Health, Barking, has made a detailed report of the extent and progress of the epidemic in that town, but his very careful study throws little or no light upon the origin or special features of the epidemic. It is very curious that such a serious outbreak of disease should receive so little attention from the Guardians of the Public Health. It is a confession of helplessness which is disconcerting in the twentieth century. It is apparently a disease against which the Medical Officer of Health can do little, whilst the general public prefer to risk contracting the disease rather than to observe the precautions for preventing it. Its peculiarities are (1) that it is exceedingly infectious (2) that at its immediate onset it is usually mistaken for a common cold, and (3) that the incubation period is very short.

An infected person, by coughing or sneezing, may spread infection throughout a room, and may infect every susceptible person in a crowded carriage or car. It is hopeless to expect people to wear masks or large respirators, but it is not too much to expect that a person shewing signs of a cold should isolate himself at home (if preferred) until the diagnosis is obtained (especially when an epidemic of influenza threatens), and carefully apply a handkerchief to his face when he feels inclined to cough or sneeze. These exceedingly simple precautions would do far more than will ever be effected by masks or inoculation or any other prophylactic method yet devised. The great number of cases in which Pneumonia was a prominent symptom will most certainly increase the prevalence of Tuberculosis for years to come.

PNEUMONIA. A study of the Pneumonia deaths leads me to conclude that many deaths really attributable to Influenza have been registered under Pneumonia. If such is the case Influenza has caused considerably more deaths than are entered against it. In Frinton and Walton (with high Influenza death-rates), no deaths are attributed to Pneumonia, and Witham (with the highest death-rate from Influenza), has a very low rate for Pneumonia; whereas Buckhurst Hill (with the lowest death-rate from Influenza), has a high death-rate from Pneumonia. In any case there can be no doubt that the high death-rate from Pneumonia, ('96) has been affected by the Influenza epidemic, as Pneumonia is the chief cause of death amongst those attacked by Influenza. Since the commencement of the present year all cases of Pneumonia due to Influenza have to be notified, and this will probably lead to a more correct classification in the future.

CANCER. Nine hundred and sixty-nine deaths occurred from this disease, the death-rate in the Urban districts being 1.1 per 1,000, and in the Rural districts 1.4. The difference is doubtless due to the large proportion of elderly persons in the country districts. The death-rate was very high in some of the smaller Urban districts, and is probably accidental.

ORGANIC HEART DISEASE. One thousand and fifty-eight deaths occurred from this cause, giving a death-rate of 1.3 in the towns and 1.5 in the Rural areas.

BRONCHITIS caused 834 deaths, a slightly larger proportion occurring in the Rural districts. The death-rates were .8 Urban and .9 Rural.

The following Table shews that over 65 per cent. of the deaths which occurred during the year were attributable to the causes above referred to:—

Diseases.					No. of deaths.	Per cent. of total deaths.
Measles, Whooping Cough, Scarlet Fever, Diphtheria, Typhoid Fever and Small- pox	...	...	...	...	347	3
Pulmonary Tuberculosis	...	...	...	...	920	8
Non-Pulmonary „	..	...	...	...	231	2
Influenza	...	...	...	...	2,498	21
Pneumonia	...	...	...	...	745	6½
Cancer	...	...	...	...	969	8
Organic Heart Disease	..	...	...	...	1,258	10½
Bronchitis	...	...	..	...	699	6
All other Diseases	...	...	...	...	4,113	35
Total					11,777	100

With the possible exception of Cancer all the other named diseases are more or less under control by the individual or the community, and indicate the direction for enquiries by the new Ministry of Public Health. The influences of different kinds

hour, of the conditions of labour and of the hours of labour are already being studied with most interesting results, and further study on organized lines must prove of the greatest benefit to the community.

The Meteorological Table (V.) shews that the rainfall during the year was above the average. The Southend rainfall was the lowest, and the highest was recorded at Halstead. The driest months were February, March and June, and April, July and September the wettest. The heaviest rainfall was in July. There were 148 days upon which a rainfall was recorded and the wet summer and autumn presented any considerable prevalence of infantile diarrhoea.

MIDWIVES' ACT, 1902.

There were 11,510 births in the Administrative County of Essex in 1918, and of this number 4,005 or 34 per cent. were attended by midwives.

The total number of illegitimate births for the County was 688. Of these, 103 were attended by midwives or 15 per cent.

The deaths of mothers, in midwives' cases, were 12. Five of these were due to pneumonia, 1 to Influenza, 2 to Puerperal Septicæmia, 1 to Embolism, 1 to Heart disease, 1 to Eclampsia and 1 to Difficult Labour.

Thirty-one deaths occurred among babies under 10 days' old attended by midwives.

One hundred Still-births were notified by midwives.

Medical help was called in for mothers in 311 cases and for babies in 120, making a total of 431 or 10·7 per cent.

MIDWIVES. One hundred-and-eighty names were on the midwives' register at the close of 1918. The average number of births attended by each midwife was 23. There are now 156 trained and 24 untrained midwives working in the County.

PUERPERAL FEVER. Thirty-five cases of rise of temperature were notified. Most of these were due to Influenza. Seven of these cases proved to be Puerperal Septicæmia, and two of the women died.

OPHTHALMIA NEONATORUM. Medical help was sought by midwives in 42 cases or discharging eyes. Of these cases about 20 proved to be severe. This is a considerable increase on last year (1917), and the number of cases of discharging eyes shows no signs of decreasing in spite of special instructions to the midwives to take greater precautions to guard against such cases.

PENAL CASES. No midwife has been brought before the Central Midwives Board during 1918, and the midwife from Romford who was under special supervision, has had her certificate returned to her as we were able to report favourably on her work.

UNCERTIFIED WOMEN. There is not a large number of such women working in Essex now. One woman at Eastwood took a case which died, and she was very severely censured by us and frightened by the police. She has taken no further cases, but another old lady in the same locality still continues to take occasional cases. We have, however, recently placed a District Nurse Midwife there, and hope the women will cease asking the old lady to attend them in future and employ the trained midwife supplied.

One patient took advantage of the Essex County Council arrangement with the Queen Charlotte Hospital. She was seriously deformed, but both mother and child did well.

One midwife was warned to keep the Rules better. She was not satisfactory and we were considering reporting her to the Board, but she died during the Influenza epidemic in the Autumn.

There were three subsidized midwives working in the County in 1918, at Pitsea, Hadleigh and Tilbury. All are doing good work in districts where they are much needed and where no District Nurse Midwife is working.

There are 88 District Nurse Midwives working in Rural Essex, and more are being placed as their training is completed and new districts formed.

INSPECTIONS. Routine inspections of all midwives have been made as in other years. On the whole the midwifery service is good, but it is still far from sufficient for the needs of the County. Probably, at least 80 more trained midwives are needed before both the Urban and Rural Districts are satisfactorily supplied.

WALTHAMSTOW is not included in the above Report, as the County delegated their powers of inspection in that district to the Urban Council.

TABLE I.

ADMINISTRATIVE COUNTY OF ESSEX.

Year.	Population estimated to middle of each Year.	Nett Births.		Nett Deaths belonging to the County.				
		Number.	Rate.	Under 1 year of age.		At all ages.		
				Number.	Rate per 1,000 Nett Births.	Number.	Rate.	
13	1,109,978	24,236	21·8	1,422	72	12,006	10·8	
14	1,043,446	22,141	21·2	1,680	76	11,503	11·0	
15	867,394	17,602	20·3	1,515	86	11,358	13·1	
	Death- rate.	Birth- rate.						
16	836,507	910,136	17,883	19·6	1,195	67	10,075	12·05
17	795,510	885,854	14,290	16·1	1,116	78	10,041	12·6
18	{ 869,002 for death-rate 775,574 for birth-rate							
		13,543	15·5	958	70	11,777	15·1	

TABLE II.

ENGLAND AND WALES COMPARED WITH THE ADMINISTRATIVE COUNTY OF ESSEX.

			Birth-rates per 1,000 population.	Death-rates per 1,000 population.	Deaths of Infants per 1,000 births.
England and Wales	...	...	17·7	17·6	97
Urban Districts of Essex	...	...	15·6	15·2	75
" "	...	...	15·4	14·9	58
Administrative County	...	...	15·5	15·1	70

TABLE V.

METEOROLOGICAL DATA, 1918.

CHELMSFORD.

OBSERVATIONS FROM THE COUNTY METEOROLOGICAL STATION.

Month.	Mean Daily Temperature	Mean Daily Range.	Maximum Temperature	Minimum Temperature	Relative Humidity.	No. of Rainy Days.	Rainfall.	Rainfall for the year in various Districts.		
								Districts.		Rainfall.
January	38.1	12.0	56	15	70	13	3.04	Braintree	...	22.81
February	42.	11.9	58	20	86	11	.72	Barking	...	24.44
March	42.0	19.2	71	23	83	6	.88	Clacton	...	23.73
April	44.2	14.0	65	30	84	16	3.03	Chelmsford	...	25.55
May	54.6	21.4	80	37	75	8	1.47	Halstead	...	25.97
June	55.8	23.2	78	36	68	7	.76	Leyton	...	24.60
July	60.6	19.4	77	42	77	18	4.9	Southend	...	22.1
August	51.4	20.6	89	44	75	6	1.5			
September	55.6	26.6	71	34	77	18	3.59			
October	48.8	15.6	63	29	86	13	1.66			
November	41.8	14.8	52	25	87	14	2.09			
December	44.4	11.1	65	27	89	18	1.91			
						146	95.55			24.2

Part II.

COUNTY SANITARY ADMINISTRATION.

My successor, Dr. Bullough, is very anxious that this report should contain a résumé of the Sanitary work done by the County Council since its inauguration, showing how it has developed and giving my opinion as to its results. This will certainly be of interest to him and may be of value in the future, hence I have agreed to the suggestion.

The County Council came into existence after the passing of the Local Government Act, 1888, and the Administrative County, as then defined, included the whole of the County of Essex with the exception of the County Borough of East Ham. Shortly afterwards a few parishes adjoining Saffron Walden to the north, which were included in the Rural District of Linton, were transferred to Cambridgeshire; a few parishes on the western boundary of the County in the Ely Rural District were transferred to Hertfordshire; the Belchamp and Great Sampstead and Stanstead Rural Districts, which formed parts of the Sudbury and Sturbridge and Bishops Stortford Unions respectively, were formed into separate Rural Districts, and the Administrative County then contained 21 Urban and 17 Rural Districts with populations of 309,697 and 267,349 respectively, or a total population of 577,046. There were also three Port Sanitary Authorities.

Since the Administrative County was first defined the following changes have taken place:—Urban Districts formed—Clacton, 1891; Chingford, 1895; Epping, 1895; Shoebury, 1895; Brightlingsea, 1896; Leigh, 1897; Wivenhoe, 1898; Thurrock, 1898; Brentwood, 1899; Loughton, 1900; Frinton, 1901; Tilbury, 1902. In 1913, Southend extended its borders and incorporated Leigh.

In 1914, Southend became a County Borough.

In 1915, East Ham became a County Borough.

The County now comprises 30 Urban and 17 Rural Districts, with populations 615,153 and 255,849 respectively, giving a total of 871,002.

The changes are shewn more fully in the following table:—

Administrative County.	No. of Urban Districts.	Population.	No. of Rural Districts.	Population.	Total population.
1891	21	309,697	17	267,349	577,046
1918	30	615,153	17	255,849	871,002
Increase 9		Increase 305,456	Decrease 18,500		Increase 293,956

When the County Council was formed special Committees were appointed, but little attention was then directed to public health that no Committee was formed

to deal with this matter. In 1890, however, the Local Authorities sent to the County Council copies of their Medical Officer of Health's reports, and these were referred to the Contagious Diseases (Animals') Committee for consideration. At the time I was Medical Officer of Health for the Chelmsford and Maldon Rural District and had published certain statistics comparing the death-rate and the prevalence of diseases in these districts with others in the County, and I was requested to consider the Annual Reports and to submit a summary to a special Sub-Committee. The first report prepared by me for the County Council was for 1890. I was invited to attend the quarterly meetings of the Contagious Diseases (Animals') Committee and to advise them on any public health matters which might be referred to them, and agreed to do so. This continued until 1894. In my report for 1893 I referred to the fact that there were too many plague spots in the County and that it was desirable that the County should exercise more supervision over public health matters, and that their Officers should render the Local Authorities some assistance. The result was that a Sanitary Committee was formed and the Council began to take more interest in the health of the County, and in 1898 the County asked the Chelmsford and Maldon Rural District Council if they would consent to my appointment as County Medical Officer of Health, provided the County Council arranged for me to continue to act as Medical Officer of Health for the Rural Districts. This was agreed to and these conditions continued until 1914, when the County work had increased so much and interests were so often conflicting that notice was given to terminate the agreement, and the Chelmsford and Maldon Councils united with the Rochford Council and appointed a whole-time Medical Officer for the three districts.

ISOLATION HOSPITALS.

One of the first subjects to which the attention of the newly-formed Sanitary Committee of the County Council had its attention directed was the want of Hospital accommodation for patients suffering from infectious diseases, and at their request I held public enquiries in most of the districts in the County and many Isolation Hospitals were erected. In 1906, after studying the effect of this increased accommodation, I was compelled to report that it had been so small that I could not advise pressure being put on the remaining Authorities, and that a study of expenditure emphasised the necessity for a comprehensive enquiry into the Administration and Utility of Isolation Hospitals. I deemed it preferable to improve the Administration of existing Hospitals rather than to increase their number, especially in small towns and Rural districts. For this purpose grants have been made to efficient Hospitals since 1907, and the Tables of Expenditure published led to greatly increased economy in several cases. (*Vide Report for 1908*, pp. 44—47).

Power now is required to combine districts for isolation purposes, which is rendered more feasible by the provision of motor ambulances. A comparatively few Hospitals would meet the requirements of the whole County, and some of the existing Hospitals could be utilized for other purposes.

RIVER POLLUTION.

Another matter in which the Sanitary Committee exhibited a keen interest was the condition of the River Roding, and of the Essex rivers generally. This led to a systematic inspection of the rivers and the detection of all the more serious sources of pollution. At this time there was apparently not a satisfactory sewage disposal works in the County, and as there were many works in the Roding Valley the condition of the river, especially during dry summers, can better be imagined than described. Barking was the chief sufferer. Sewage came down the Roding from the towns above and the foul effluent from the London sewage works backed up the creek from below, with the result that putrifying sludge accumulated at the wharf in the town.

My first suggestion for improving these conditions was the provision of a trunk sewer for the Roding Valley to collect all the sewage from Loughton downwards, and to include that from Walthamstow, Leyton, East Ham and Ilford, and convey it to the London outfall works, where an efficient system of treatment could be provided. Conferences were held and Engineers consulted. The scheme was feasible and should have been carried out, but there was no Authority with compulsory powers and each Local Authority preferred to provide its own sewage disposal works. From Ongar, downwards, works were installed, all of which were capable of producing an effluent of a satisfactory standard. Samples were collected quarterly by me or my assistants, and the works were annually inspected by me until the War commenced, since which occasional samples only have been taken and occasional visits made. At present all these works are satisfactory, but any considerable increase in the population may result in improvements being required, as all the works cannot be said to be up-to-date.

In many other parts of the County sewage works were provided and some of the largest villages have been provided with sewers.

The River Colne still receives some pollution from the Hedinghams, Earls Colne and Wivenhoe, and to a smaller extent elsewhere.

The River Chelmer is polluted by the sewage of Thaxted, a village which urgently needs sewerage. In the lower portion of this Valley, Broomfield is the most populous parish which has no system of sewers. Sewers should be provided here and connected with the Chelmsford system, as I do not advocate the multiplication of small sewage works unless absolutely necessary.

In the Blackwater Valley the chief pollution is at Heybridge and Maldon, but the water is tidal here and the sewage gets so diluted that sewage works are unnecessary. Care, however, should be taken that no shell fish is collected from near the sewer outfalls, as many limited outbreaks of Typhoid Fever have been traced to such polluted shell fish. At the mouth of the Blackwater Estuary the sewage of Bradwell and Tollesbury reaches the river, but affects very limited areas. These areas, however, should be carefully avoided when dredging for shell fish.

Similar care wants taking in the Colne Estuary near Wivenhoe, Brightlingsea and West Mersea. This latter village requires sewerage and also a water supply.

In the Thames Estuary the places requiring attention are Grays and Tilbury, and the populous riverside parishes adjacent. A Sewerage Board for the whole area has been formed, but work has been in abeyance since the recent War commenced. As soon as possible the Board should renew its activity.

Southend was, until recently, the chief source of contamination, but it now has extensive sewage works, and the effluent is discharged at ebb tide well away from the shore.

On the coast, Shoeburyness chiefly requires watching, as a great extent of foreshore here is exposed every tide and the crude sewage is discharged at no great distance from the shore. Some years ago a serious outbreak of Typhoid Fever occurred, due to the eating of cockles picked up on the foreshore. By notice, &c., people are warned about eating shell fish picked up on the foreshore between Leigh and Shoebury, and the cases of illness now attributed to this cause are comparatively rare.

Prior to the improvements in the Roding and Thames Estuary, the whole of the Valley from Barking to Shoeburyness had a mortality from Typhoid Fever about two to three times as high as for the remainder of the County. Now the difference is so slight as to be negligible, and I believe is entirely due to the sanitary improvements carried out in connection with the sewage disposal. The excessive prevalence of Typhoid Fever in certain parts of Essex gave the County an unenviable notoriety, and it is a matter for congratulation that the County now has a Typhoid death-rate below the average for the Country.

The parishes most urgently in need of proper sewers and sewage disposal works are Thaxted, Bocking, West Mersea, Broomfield and Great Wakering.

WATER SUPPLIES.

This subject has always had a fascination for me, and at different times the character of the supplies in practically every village has been studied. I have made thousands of analyses, most of which are now out of date and of no value. The more important ones are given in the Report for the year 1911, and in the Geological Survey on the "Water Supply of Essex." Interesting information is contained in my reports for 1911, 1912 and 1913, and more especially that for 1914. Since then there have been few or no changes, and the conclusions referred to in the last-named report still holds good. The County Council has not yet fully realized the importance of the subject to the prosperity of the County, but as the difficulty of obtaining supplies to populous districts in the County increases attention to the subject will become imperative. It takes years to devise and carry out any large scheme, hence the future water supply should be receiving careful attention.

The areas chiefly requiring consideration are in the south of the County beyond the limits of the Metropolitan Water Board area.

Where Water Companies are supplying districts the Sanitary Authorities should assist them in extending their mains to the more thinly populated areas where water is urgently required, and where it is quite impossible for the Companies to extend their mains without being subsidized. These Companies have accepted risks which the Authorities ought to have accepted, and as they are not philanthropists but have to provide a reasonable dividend to their shareholders, they should receive reasonable assistance. All the Urban Districts have good water supplies, though often somewhat limited in amount, but there are many Rural parishes urgently in need of supplies and some whose development is being retarded for want of a supply. Many of these parishes could be most economically supplied by being combined into a water area, but until the County Council becomes a Water Authority, with sufficient powers, or some other Authority is set up, there is little hope of improvement, since no scheme which can be devised can be made self-supporting. Rate-aid will be required. So large a part of Rural Essex wants proper supplies that it is invidious to make special reference, but some of the largest parishes where schemes are likely to be least costly, include the Hedinghams, Thaxted and West Mersea. Ardleigh is to be supplied by the Tendring Hundred Water Co., and Havering-atte-Bower, Ingrave, and Herongate could be supplied by the South Essex Co.

A special report on the water supplies to Essex was issued in 1901, and a few years later, the part more especially relating to the Rural districts, was brought up to date and issued to the public, at the instigation of the Earl of Warwick, who was then Lord-Lieutenant for the County. The importance and the urgency of the subject is enhanced by the various housing schemes now under consideration.

The present sources of supply are being depleted. The water travels so slowly through the sand beds in the lower London tertiaries, and the outcrop of the sand and of the chalk beneath is so limited that water is now being pumped from the wells more quickly than it can be replaced. Consequently, the water level is continuously falling, and the difficulty and expense of raising it increases.

Some years ago I pointed out that exceedingly minute quantities of chlorine would, under certain conditions, destroy all harmful bacteria in water. That large doses would do this was already known, but with such large doses the water was so unpalatable as not to be adapted for the purposes of public supplies. Now the minute dosage is adopted by a large number of Water Companies, and I have under supervision Waterworks treating many millions of gallons per day. There are several rivers in Essex yielding water which can be so treated, and the time will come when these waters will have to be utilized. The Metropolitan Water Board is now treating Thames water in this way, and if the necessity arises the Board could probably supply the County with a few million gallons per day, but it would be far better for the County to utilize the water in its own borders which is now running to waste.

SCAVENGING AND EXCREMENT REMOVAL.

In many of our towns there exists water-closets with no water laid on thereto. In 1897 I issued a special report on these hand-flushed closets, based on complaints made by Medical Officers of Health, and upon experiments carried out by myself and described and illustrated in the Report. Latterly, there have been few complaints, but the matter should not be overlooked and in the early future an enquiry might be made to ascertain if many closets of this type still exist. *Vide Annual Report 1914, page 114.* In Barking, Romford and Waltham Holy Cross, there was in 1914 a number of cesspools. In Barking and Waltham these were emptied by the Council's men, but in Romford the emptying was left to the tenants of the houses draining thereto. Wherever possible these should be abolished. In the Rural districts there are still many cottages having privies in common, and the old fashioned underground cesspit privies abound in certain areas. These constitute a nuisance and a danger to health, and the Sanitary Authorities ought to get them "converted" at the earliest possible moment.

In the same report the question of scavenging is also fully discussed, and it is shewn that there are many towns with fixed ashpits. In Colchester, alone, there were then over 1,000, but during the preceding years the Corporation has abolished 1,818. Attention should be given to these towns so as to expedite the abolition of all these receptacles for accumulating filth.

In most of the Urban areas the public scavenging is undertaken by the Urban Councils, but in thirteen towns it is done by Contractors and in a few towns the use of properly covered carts is not insisted upon. These towns require to be kept under observation. There are Refuse Destructors at Leyton, Walthamstow, Grays and Ilford, and Barking is considering the question of providing a Destructor. At Waltham Holy Cross the refuse is used for firing the boilers at the sewage works. In all cases, now, the heat produced in refuse cremation is or should be utilized. From time to time complaints arise from the "tips" where the refuse is dumped but such complaints chiefly arise from the huge tips on the Thames side due to the dumping of house refuse and filth from London. In 1911 I submitted to the County Council a detailed report on these nuisances, and on several occasions have had to advise Authorities on this subject and to give evidence where prosecutions were decided upon. The result is that these nuisances are now far less common. Care is taken in selecting sites for the "tips," and earth and lime are used for covering the exposed faces.

OFFENSIVE TRADES.

There are few offensive trades carried on in the County (chiefly at the Thames side) and on occasions these have created nuisances, and legal proceedings have been taken. The most serious of these nuisances occur at factories where waste fish, unwholesome meat, fat, offal, &c., are brought down and boiled to obtain t

fat. Often the pressed residue is utilized for feeding pigs, but more frequently for conversion into manure. There is, at the present time, only one such "place," near Chingford, which requires to be kept under special observation.

HOUSING OF THE WORKING CLASSES.

This most important subject has been dealt with by the recent County Reconstruction Committee, and my report thereon can be consulted as it deals with all the aspects of the question from the Public Health point of view. Where complaints had been lodged with the County Council special investigations were undertaken, and these will be found described in my Annual Reports—1909, p. 44; 1910, p. 111; 1911, p. 62, *et seq.*; 1913, p. 111; 1914, p. 120.

SANITARY STAFF. BYE-LAWS.

Some years ago I obtained information from all the Sanitary areas concerning the Staffs and the Bye-laws in force. I had intended bringing this up to date, but the War commenced and I did not feel justified in putting the Authorities to the trouble of compiling the information, especially as they are under no obligation to furnish the County Council with it. Possibly, my successor will endeavour to obtain it as it is constantly required for reference. Certain Rural Districts, I believe, have few Bye-laws and might adopt certain ones with advantage. A comparison of all the Building Bye-laws, especially in the Rural Districts, would be particularly interesting and useful.

WORK UNDERTAKEN BY THE COUNTY COUNCIL.

As previously stated, when the County Council came into existence it had no Public Health duties whatever, but it was empowered to appoint a County Medical Officer of Health. When, ultimately, I was appointed no duties were assigned to me, but I tabulated the Annual Reports and submitted these with my notes to the Sanitary Committee, visited all the districts in the County to meet and consult with the local Medical Officers and discuss with them the Sanitary requirements of their districts and to make myself acquainted with all the more important conditions likely to affect the public health. Conferences with representatives of the local Councils were fairly frequent, and my advice was always placed at their disposal. I held enquiries under the Isolation Hospital Act which had just been passed, and which imposed upon the County Council certain duties and gave them certain powers. In my Laboratory, at Chelmsford, work was done both for the County and District Councils, and a little later arrangements were made for making Bacteriological diagnoses for Medical Officers of Health and for private practitioners. Then the Midwives' Act was passed and I was appointed the Inspector of Midwives for the County. Up to this time I did all the work with the assistance of a qualified pupil or assistant. Between us we performed all the duties of Medical Officer of Health, Inspector of Midwives, County Sanitary Inspector, Chemist, Bacteriologist and Pathologist, and were our own Clerks.

SCHOOL MEDICAL INSPECTION.

In 1902 the Education Act made the County Council responsible for attending to the health of all children attending school, and as I became Chief School Medical Officer the work increased to such an extent that I had to remove my Laboratory to London and put it in charge of a qualified Medical Bacteriologist and an Analyst. The County was divided up into areas and a Staff of School Medical Officers appointed, but the Education Committee and the Sanitary Committee often wanting my services at the same time, it was decided that a Chief School Medical Officer be appointed so that each Committee would have its own officer. This was done and my connection with the School work, except in an advisory capacity, came to an end, but soon after the Insurance Act was passed and the Local Government Board issued their instructions with reference to the duties of County Councils in dealing with Tuberculosis. This meant an immense increase in the work; a Medical Staff had to be appointed; Sanatorium arrangements made and the whole work supervised. Two clerks were appointed, afterwards increased to four, and with these we managed to carry on, notwithstanding the commencement of the War.

TUBERCULOSIS.

In my Report for 1910, I have dealt with the subject of Tuberculosis at some length, in consequence of a County Association having been formed for the "Conquest of Tuberculosis," as a Memorial to the late King Edward VII. I concluded this report with the following words:—"I would respectfully urge the Association to decide as early as possible upon the line of action which it will take, as the present uncertainty is paralysing all the efforts of Medical Officers of Health and is preventing any progress being made." It refused to adopt my suggestion and provide a small Sanatorium, and from that time to this it has practically done nothing. In November, 1911, the Local Government Board issued their memorable circular informing Local Authorities that power was given them to supply medical assistance &c., to patients suffering from Tuberculosis (p. 41, Annual Report, 1911). Soon after this the Insurance Act was passed and the Sanatorium benefit came into operation on 15th July, 1912, and placed on the County Council the responsibility which, less than a year before, the Local Government Board had placed on the Local Councils. The steps taken by the County Council and the County scheme are contained in the Annual Report for 1912. In the first year an enormous amount of work was done.

Within a year the County had provided 84 beds at various Hospitals in the County and had taken five beds at Ipswich Sanatorium, 20 at Maltings Farm Sanatorium, six at Merivale Sanatorium, and 10 at Victoria Park Hospital, a total of 125. Many of these arrangements had been made before the Insurance Act came into force. The County had been divided into six Dispensary Districts and six Tuberculosis Officers appointed, and six Dispensaries and one or two Visiting Stations provided. Land for a Sanatorium was being sought for, and by the time the County Report for 1912 was prepared (pp. 9--11) an estate of 100 acres at Sandon had been purchased.

Preparing plans for the Sanatorium required some time, but these were completed and passed by the Local Government Board in 1914 and tenders invited. Then War was declared and all further progress was prevented. As the War continued and more Sanatoria beds were required for invalided soldiers and sailors, the County Council did all that was possible under the circumstances, providing Sanatoria at Black Notley and at Sible Hedingham, and the adverse criticism which is occasionally heard comes from persons who have not made themselves acquainted with the facts, and in a few cases from persons who choose to ignore the facts. This criticism has all been of the "destructive" type, and none of an instructive or constructive type has been offered. If there is one thing which the County has done for which they deserve the thanks of the population it is for the time and attention they have given to this subject.

The County Council, in 1918, secured possession of Harold Court from the County Asylums Committee to serve as a Sanatorium for such cases, and also took over an Institution in Epping Forest to serve as a Hospital or Sanatorium for Children suffering from Non-Pulmonary Tuberculosis. So many alterations and improvements were deemed necessary that neither of them were ready for occupation before the middle of the present year—1919.

At the present time the Tuberculosis Officers are chiefly engaged in doing work which could be equally well done by the medical practitioners who are receiving the pay for it, from the Insurance Funds. The Sanatoria are doing work which could, in many cases, be better done by providing Tubercular families with Sanitary houses in the country and providing Nursing and Home Care, the necessary medical attention being provided by the local practitioners. Hospitals for advanced cases and for cases requiring surgical treatment will always be necessary, and open-air Institutions for children with early Tuberculosis will always be desirable, but other cases could, as a rule, be better and more economically dealt with in their homes than in Sanatoria. However, I must admit, that Sanatorium treatment on a large scale has not had a fair trial, and the results obtained so far as the experiment has extended are rendered of little value on account of war conditions. But the fact that the disease has steadily increased since the Insurance Act was passed does not afford much ground for hope. However much Sanatoria are improved and however unsuccessful the results, there will always be people who will explain these results by alleging inefficient treatment or administration. To meet these views more and more money will be spent, and one can only hope that ultimately there will be results commensurate with the expenditure. There can be no question that children in the early state of Tuberculosis and in the state of malnutrition rendering them especially susceptible to the disease are very greatly benefited by open-air treatment and by the attention they receive in Institutions like that at Sible Hedingham, but in many cases this improvement is only temporary, a return to home conditions gradually dissipating the energy they had stored at the Sanatorium. I am of opinion, however, that on the whole the results in the case of children are more enduring than in the case of adults.

With adults the Institutional treatment has a distinct educational value, but the curative effect is too often neutralised by worry. Patients worry over their family affairs, they are in doubt as to what is going on at home during their absence, and often they worry, and very naturally, about the future. Something wants doing to relieve them of these anxieties, a very difficult but most important problem towards which far more attention should be directed, since until it is solved, Sanatorium treatment can never be a real success.

The State, having once taken charge of the Consumptive, should look after him *in loco parentis* until his health is fully restored or death has released him from his suffering. The present half measures cannot be expected to have more than a temporary effect, and it is to be hoped that the Minister of Health will cause the fullest enquiries to be made with reference to the results obtained by the present system with the view of modifying it or supplementing it so as to secure more permanent benefit.

VENEREAL DISEASES.

In consequence of the Report of the Royal Commission appointed in 1913, the Local Government Board, in July, 1916, issued "Regulations" and "Instructions." Each County Council was required by the latter to request their Medical Officer of Health to prepare a statement of the extent of the probable needs of the County for Treatment, &c. In consequence, I prepared a Report which will be found in the Annual Summary for 1916. The whole of my suggestions was acted upon and have only been altered since to the following extent:—

1. No patients having attended at Saffron Walden Hospital, the arrangements made therewith were terminated at the end of the year.
2. Chelmsford Hospital not being able to provide medical attention on account of the War, gave notice to terminate their Agreement.
3. An arrangement has been made with the County Boroughs of West and East Ham and the Port of London, for patients to be treated at the Seaman's Hospital at the Albert Docks.

After the exclusion of the Saffron Walden and Chelmsford Hospitals from the scheme, I was empowered to pay the travelling expenses of patients in those areas to and from the nearest Treatment Centre. Public meetings have been held in every large centre of population in the County and a good deal of literature distributed, and some advertisements issued in the Press.

The great majority of Essex cases are treated at the London Hospitals, but the number treated has not reached my original estimates. A peripatetic Venereal Disease Officer has not been appointed.

There is no question that these diseases are widespread and cause—

- (a) An enormous amount of suffering and ill-health amongst those infected,
- (b) and a large number of deaths. After apparent cure the germs of the diseases lurk in the system and cause amongst females, stillbirths, abortion, and diseases of the internal organs, and in both males and females, often after a long period, diseases of a fatal character occur which the patients never attribute to the true cause, and which medical men, even if they suspect the cause, do not enter on the death certificate, hence the impossibility of ascertaining with any degree of precision the number of deaths directly and indirectly due to these infections. The effect upon children—blindness, imbecility, &c., is undoubted.

Until recently, patients generally received attention from Quacks or from Chemists and Druggists, and as the primary symptoms, as a rule, quickly subside upon treatment, the patients regarded themselves as cured. Now that such treatment is illegal it remains to be seen whether more patients will be attended at the Hospitals or by medical men in private practice.

Everything in connection with these filthy diseases, almost invariably contracted by actions considered immoral, is so shrouded in mystery that until their loathsomeness and their dangers are publicly revealed our efforts are not likely to be attended with much success. They are amongst the most easily preventible diseases. Prevention is chiefly a case of cleanliness and disinfection, and one set of people would publish the details broadcast whilst another would keep them a profound secret for fear of fostering immorality. Truth cannot be concealed, and probably the quiet dissemination of this knowledge will do more towards eradicating the diseases than all the Hospital and Treatment Centres combined. Prevention is better than cure, and in this case prevention is infinitely more easy than cure. The best way of spreading the necessary knowledge and of eliminating any harmful effects likely to result therefrom and compulsory notification, are the subjects which should now receive the greatest attention. Moral influences and the baneful effect of alcohol are two most important factors, the former as a preventative and the latter, by its weakening of the will, one of the most prolific causes of the spread of such diseases. At present the amount of money spent in attempting cures is not justified by the benefit which accrues therefrom, at least this is my opinion.

MATERNITY AND CHILD WELFARE.

53

The work in connection with this Department may be said to have commenced with the passing of the Midwives' Act and the inspection of the midwives by the County Council. For some years this has been done by Miss Thresh under my supervision, and she has organized a Midwives' Association which is one of the largest in the Country. With the advent of the countless volumes of Reports and Instructions issued by the Local Government Board, attention has been centred upon the necessity for doing something more than merely inspecting

midwives, and in 1915 the Notification of Births' Act made the notification of births compulsory. In November, 1914, I presented to the County Council a report on "Maternity and Child Welfare" (Annual Report, 1914, p. 79), and in September, 1915, a Conference of Representatives of Sanitary Authorities was held in the Shire Hall, Chelmsford, over which the present Chairman of the County Council presided, to consider by whom the Notification of Births' Act should be administered (Annual Report, 1915, p. 25). At this Meeting I suggested that the County Council should adopt the Act, appoint Health Visitors, &c., and I concluded with the following sentence:—"Midwives' inspection, visiting Tuberculosis patients, visiting of mothers and infants and the visiting of school children, all want linking up together, to minimise cost, to reduce the number of officials required and to secure uniformity, continuity and maximum efficiency. It is better to begin now on such systematic lines as I have indicated, than for a number of Departments and separate Authorities to develop the work on haphazard lines, which at a later date will have to be co-ordinated."

Unfortunately my eloquence was wasted, practically every Authority, large and small, preferred to adopt the Act locally and do their own Maternity and Child Welfare work. It was finally resolved, "That the County Council be recommended not to adopt the Act for the County or any portion thereof." This was accepted later by the County Council and, as I anticipated, very many of the Rural and smaller Urban Authorities have done little or nothing. This is now so well realised that my successor should have very little trouble in getting the resolution rescinded and in effecting the combination which, at that time, I foreshadowed. The whole Public Health Administration in the County, save in the large Urban districts should be under the supervision, and to a large extent, under the control of the County Council. Until this is done progress in any direction will be slow, and the want of co-ordination will be continuously felt.

ISOLATION OF INFECTIOUS DISEASES.

In my preliminary remarks the steps taken so successfully by the County Council to ensure adequate Isolation Accommodation were referred to. These arrangements, however, require modifications and improvement, chiefly on account of the introduction of motor ambulances. Patients can now be so safely removed considerable distances that some districts could be combined and where there are two or more Hospitals in the area, one could be utilized for certain diseases such as Scarlet Fever and Diphtheria, and others for Measles, Typhoid Fever, Puerperal Fever, Tuberculosis, &c. I think a good deal of economy could be effected by such an arrangement.

The provision for cases of Small-pox, now that the Dagenham Hospital, owned by the West Ham Corporation is not available, requires immediate attention. Two or three Hospitals could be made to serve for the whole County. The one at Colchester might serve the Northern portion, the one near Grays the South-East portion, and one should be provided for the South-West and extra suburban districts.

y suggestions on this subject were issued in the form of a special report, and have been before the Public Health Committee on more than one occasion. It is within the power of the County Council to provide such an Institution for a number of districts, and it would be much easier to do this than to get it done by the District Councils themselves combining together for this special purpose.

HOSPITAL GRANTS.

To encourage the provision of Isolation Hospitals and their Maintenance in a state of efficiency, the County Council decided to make annual grants of £5 per bed to the Hospitals erected out of rates, and which had not been approved by the Local Government Board, and of £10 per bed to Hospitals erected by the aid of grants approved by the Local Government Board. The grant to the former group was only paid for one year since the Local Government Board ruled that it was illegal, the Isolation Hospital Act only allowing grants to be made to Hospitals approved by the Board. Afterwards, the grant was limited to such Hospitals, and the non-approved Hospitals ceased to be periodically inspected. The County Council has no control over them, but the grant has ensured all recent additions being made upon plans duly approved, and for such portion grants are made. The only Hospitals now which are not subsidised by the County Council are at Burnham, Vanstead and Epping; Stansted and Belchamp join at unapproved Hospitals outside the County, and therefore received no grant. Bumpstead Rural and Wivenhoe Urban are the only areas with no immediately available Hospital accommodation enough, doubtless, Colchester would admit cases from Wivenhoe with very little delay.

A description of the Isolation Hospitals in the County is contained in the Annual Summary for 1910, and the few alterations made since are referred to in subsequent reports.

ADMINISTRATION OF THE FOOD AND DRUGS ACTS.

In this County the Administration of the Foods and Drugs Acts has never been under the control of the Public Health Committee. The subject is one which has a marked bearing upon health, and sooner or later it will have to be controlled by the Health Department. When medical evidence is required at any prosecution I have attended the Court. These cases have been very few and chiefly related to the effect of an excessive amount of boracic acid in milk or the effect of certain amounts of lead in such things as Cream of Tartar. The County Analyst, Dr. Dyer, sends the Department quarterly, a report under the Public Health (Milk and Cream) Regulations, 1912, and each year he has obliged me with a report on Samples analysed during the preceding 12 months.

PUBLIC HEALTH LABORATORY WORK.

When I first came into the County as Medical Officer of Health for the Chelmsford and Maldon Rural Districts, I undertook to do all the Water Analyses

required by the Councils free of charge provided I could make such analyses for other Authorities or individuals and charge reasonable fees. When appointed County Medical Officer of Health the same arrangement was made with the County. Meantime, I had studied the application of Bacteriology in the diagnosis of disease, and was one of the first persons in the Country to undertake such diagnosis for Diphtheria and Typhoid Fever. This work has always been paid for by the Medical Practitioners sending the specimens or by such Local Authorities as had empowered specimens to be examined at their expense. The work has increased steadily, and at the Laboratory all kinds of Public Health work, not included in the Sale of Food and Drugs Acts, have been done therein. The work is not confined to Essex, arrangements having been made with other Counties and with a considerable number of Urban and Rural Authorities. The question whether the County Council could establish and staff a Laboratory and do the work as well or as economically is an open one, and in my present position any opinion I might give could not be regarded as entirely without prejudice. The Medical profession will have no confidence in the results obtained at any Laboratory unless they knew that some person in whom they have confidence is in charge of it, and a person of this position cannot be obtained save for a high salary. One hears that Laboratories run by certain County Councils are giving satisfaction, but I knew that a good deal of my Laboratory work come from such Counties. The time will come when there will be a series of properly staffed and equipped Laboratories in the Country each serving a particular area, since if this area is large enough and populous enough it could be made an economic proposition.

Having now referred to the various developments during the last 29 years a comparison may be made of the mortality statistics at the commencement and end of that period, and to make the results more reliable the averages for the five years 1890-94, and for 1914-18, may be utilized—

	1890-94.		1914-18.		Difference, per cent.	
Death-rate from all causes	...	15·65	...	12·75	...	— 18
Infantile Mortality	...	120·	...	75·	...	— 37½
The six chief Zymotic Diseases	...	1·5	...	·45	...	— 70
Diphtheria Death-rate	...	·5	...	·14	...	— 72
Enteric Fever „	...	·17	...	·03	..	— 80
Tuberculosis Pulmonary Death-rate	1·15	...	·99	...	...	— 14
Cancer	...	·63	...	1·1	...	+ 74

The death-rate from all causes has fallen 18 per cent. The mortality amongst infants has fallen 37 per cent., whilst the infectious diseases (Scarlet Fever, Small pox, Diphtheria, Typhoid Fever, Measles, Whooping Cough), have decreased no less than 70 per cent. Typhoid Fever has fallen 80 per cent. Pulmonary Tuberculosis had decreased by 33 per cent. before the County campaign commenced, but since then it has increased and the fall now is only 14 per cent. Cancer has increased by 74 per cent.

Cancer seems entirely beyond our control and the cause of its increase is known. The recent increase in the prevalence of Pulmonary Tuberculosis is probably due to War conditions and was also beyond our control. The statistics as a whole are, however, exceedingly satisfactory. Had the death-rate for 1890-94 continued to the present time, the deaths in the present Administrative County would have been 18 per cent. more than they are. In other words, there has been in recent years a saving of about 2,600 lives per annum, and out of these about 260 could be infants under one year of age. The deaths from infectious diseases have fallen to less than one-third of the previous rate, an extraordinary decrease.

It can be said, definitely, that the money spent in sanitary improvements during the last 30 years has been remunerative, and more than commensurate with the expenditure.

In getting out the above statistics, the following records with reference to small-pox are worthy of being recorded, as at any time they may prove of importance:—

Year.	Deaths from Small-pox.		Cases notified.		Year.	Deaths.		Cases.	
1890	...	0	...	0	1895	...	11	...	63
1891	...	1	...	11	1896	...	0	...	19
1892	...	3	...	33	1897	...	0	...	0
1893	...	11	...	235	1898	...	0	...	5
1894	...	19	...	420	1899	...	0	...	3
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1900	...	2	...	18	1905	...	0	...	3
1901	...	23	...	227	1906	...	0	...	0
1902	...	181	...	1334	1907	...	0	...	0
1903	...	8	...	96	1908	...	0	...	3
1904	...	2	...	111	1909	...	0	...	0
<hr/>									
1910	...	2	...	7	1905	...	0	...	1
1911	...	1	...	10	1916	...	0	...	0
1912	...	0	...	1	1917	...	0	...	1
1913	...	0	...	4	1918	...	0	...	0
1914	...	0	...	0					

In 1890 the County seemed to be free from Small-pox, but in 1891-2 a few cases occurred. Then in the Autumn of 1893 an outbreak commenced which extended well into 1894, and over 650 cases were notified. The disease decreased rapidly until 1897 when the County again seemed free from infection, but in 1901 a most severe epidemic commenced and in 1902 no less than 1,334 cases were notified and 181 death occurred. For two years the disease was continuously prevalent when it disappeared, and since that date only a few odd cases have occurred. For the last five years only two cases have been notified and no deaths has occurred. After this long period of quiescence every effort must be exerted to fight any threatened

epidemic at its onset. If the experience of previous epidemics is to be relied upon, certainly a year's notice will be given. Thus in the 1893-4 outbreaks, 33 cases occurred in the previous year, and in the 1901-2 outbreaks 18 cases were notified in 1900. We may, therefore, assume that for a year we are fairly safe, but beyond this any prophecy may be fallacious.

The possibility of outbreaks of Plague or Malaria, diseases introduced by discharged soldiers, should not be forgotten, but the probability is very remote.

